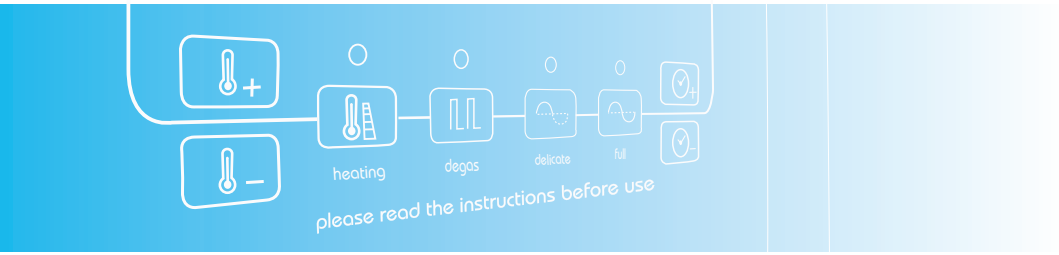
allendale-ultrasonics.co.uk

Suppliers of Ultrasonic Cleaners and Solutions

Industrial Ultrasonic Cleaner User Manual



V1.2

www.allendale-ultrasonics.co.uk - Images & Content ©2013 Allendale Electronics Limited.

General Information

Introduction

This user manual is for use with Allendale-Ultrasonic Industrial ultrasonic cleaning tanks.
All cleaning tanks should be handled with care to ensure maximum performance.

Please read and understand this user manual before using your ultrasonic cleaner.

Care and Safety

- Do not operate if the tank is less than 2/3 full.
- Ensure power is disconnected before attempting to add or remove fluid.
- Do not let items rest on the base of the bath, always use a glass beaker or basket.
- Do not place hands or fingers in the bath. Contact exposure to ultrasonic cavitation is suspected to cause living tissue and bone damage.
- Do not use any fluids which could potentially damage the stainless steel bath e.g acids.
- Do not use fluids exceeding 80 °C.
- When submerging parts ensure fluid is not displaced out of the bath.
- Maximum running time for a single cycle is 45 minutes.
- Always allow a rest time of 20 minutes between cleaning cycles.
- Never drop an item onto the base of the bath.
- Always clean bath after use.
- Never change the fuse for a higher rated one.
- Aqueous solvent/detergent solutions should be made up with deionised, demineralised or distilled water unless it is known the solvent contains a water softener. Calcium carbonate and other impurities in tap water can effect/ reduce the cleaning properties of the solutions and produce undesirable side effects such as deposits and staining.
- Volatile solvents with low boiling temperatures should not be used. The ultrasonic action can cause them to heat rapidly and the vapour is a fire risk and may be detrimental to the health of the operator.
- Care should be taken when using the heaters, check the thermostat position before powering on the cleaner. Do not leave unattended.
- Only responsible adults should operate ultrasonic cleaners.
- Heated fluids and objects being cleaned are a potential scold risk.
- Wear ear protection whilst operating the ultrasonic cleaner.

Failure to carefully follow the points above could void the warranty and cause injury.

www.allendale-ultrasonics.co.uk - Images & Content ©2013 Allendale Electronics Limited.

Contents

About Ultrasonics

How Ultrasonics Works	4
Objects Ultrasonics Can and Can't Clean	4
Operational Advice	5-6

Industrial Series

Product Operation	7
Cleaning Modes	8
Different Methods of Cleaning	8
Series Features	8
Series Comparison	9

Other Tanks and Accessories

Industrial Sized Tanks	10
Cleaning Baskets	10
Ultrasonic Solutions	10
Rapidex	11

Legal Information

Trademarks and Copyrights	11

About Ultrasonics

How Ultrasonics Work

Ground-In dirt and grime can be extremely tedious to remove by hand, however it becomes easy with the use of ultrasonic cleaners. A wide range of parts can be cleaned by the ultrasonic process to a 'Like New' condition with the right detergent/solvent without damaging the part.

A physical effect called "acoustic cavitation" generated in the liquid is responsible for the cleaning process. Cavitations form when ultrasonic waves travel through liquid. When a sound wave travels through fluid it stretches and compresses the liquid to transmit the sound, as the amplitude of such sound waves increase to a critical level the negative pressures create cavities in the water.
As these cavities collapse high temperatures and large forces are generated in a very localized area, the accumulative effect of millions of these collapsing cavities is responsible for the cleaning action and are particularly effective when used with the correct detergent/solvent. Cavitation takes place where ever the liquid comes into contact with the object being cleaned, for example;
fine recesses/cracks and obscured chambers to clean where many other cleaning methods cannot reach.

Objects Ultrasonics Can and Can't Clean

Ultrasonic cleaners can be used to clean just about anything. The list below names the most common items cleaned by ultrasonics:

- Taps, Dies, Milling cutters,
- Engine Blocks,
- Carburetors,
- Jewellery (Gold, Silver and Platinum)
- Waterproof watches
- CD's and DVD's,
- Medical equipment / instruments (ultrasonic cleaning does not sterilize, it must be followed by sterilisation in an autoclave)
- Dentures,
- PCBs / assemblies (clean with caution, see operational advice below)
- Golf clubs,
- Ceramics,
- Paint spray guns,
- Tattooing equipment (ultrasonic cleaning does not sterilize, it must be followed by sterilisation in an autoclave)
- Printer heads,
- Diving respirators,
- Bike parts and much more.

Most objects can be processed in an ultrasonic tank but there are some exceptions including some plastics, precious stones and electronic components. We advise checking with the manufacturer of the objects to be cleaned whether they are suitable for ultrasonic cleaning.

www.allendale-ultrasonics.co.uk - Images & Content ©2013 Allendale Electronics Limited.

Operational Advice

1. Around 20 minutes should be enough to remove/loosen most foreign bodies from the item you are cleaning. There is no specific recommended duration for a cleaning cycle but generally the shorter the better to minimize the possibility of damage to the item being cleaned especially if it is to be cleaned regularly. It will reduce the ultrasonic cleaning cycle time by soaking the item to be cleaned for as long as possible before ultrasonic cleaning. It is recommended after cleaning is completed to perform a short rinse cycle with clean water to ensure cleaning agent deposits are not left in obscured areas of the object.

2. The action of ultrasonic cleaning will slowly micro pit the surface of metals, aluminium is particularly easily eroded. The softer the metal the more rapidly it will be eroded which may be a concern with polished machined and aesthetic parts which need to be cleaned regularly.

3. Gemstones including those used in jewellery and clocks should be cleaned with great caution. Some stones are surface eroded, can lose colour or become discoloured, crack due to ultrasonic shock and/or heat, see the list below for stones which are unsuitable for ultrasonic cleaning,

   Please note; this list is for reference only and is by no means exhaustive;
   Pearl, Opal, Amber, Tanzanite, Emerald, Peridot, Agate, Amazonite, Topaz, Aquamarine, Turquoise.

4. **Please note; this information is for reference only and is not exhaustive**
   Weaker gemstone settings such as Grain, Pave and invisible can be loosened by ultrasonic cleaning. Mechanically superior settings such as Claw and rubover are not generally affected.

5. Certain electronic components are considered sensitive to ultrasonic cleaning, unfortunately there is very little empirical published data regarding this subject. In general it is safe to clean the vast majority of electronic components. To minimize the potential for damage use a basket to reduce the ultrasonic intensity, turn the basket occasionally during the cycle to stop ultrasonic hotspots and use an effective aqueous solvent to quickly remove the contamination.

6. You should consider adhesives used in the object being cleaned, these can be attacked/softened by the detergent/solvent used and the bond undermined by the ultrasonic effect.

7. Fully immerse item into the water. Ensure there are no air pockets in recesses and blind holes/ chambers to ensure the ultrasonic effect can propagate to all surfaces of the item being cleaned.

www.allendale-ultrasonics.co.uk - Images & Content ©2013 Allendale Electronics Limited.

8. Delicate items should be cleaned in a basket to reduce the ultrasonic intensity and turn the basket periodically during the cleaning cycle to stop standing wave cleaning hotspots.
All single frequency ultrasonic cleaners create standing waves where the cleaning effect is most aggressive, between these hotspots the ultrasonic intensity will reduce. A more even clean is achieved by using the “sweep” function (see page 8) and by periodically moving the item being cleaned or turning the basket several times during the cleaning cycle.

PLEASE NOTE; the use of a basket will reduce the cleaning effectiveness, for this reason it is preferable to suspend heavily soiled robust items so they are exposed to the full ultrasonic intensity. Items must not sit on the base of the bath.

9. Always use warm water, never hot/boiling. If using an aqueous solvent you can speed up the heating of the fluid by mixing some preheated water with the room temperature fluid in the bath and fitting the lid which also reduces evaporation. Do not thermally shock the bath by putting boiling water directly into an empty bath.

Refer to fluid manual for operating temperatures.

10. Make sure there is good space around your objects, it is not advised to overlap items in the tank. The more items loaded into an ultrasonic cleaner the longer the required cycle time will be to effectively clean them so it is better to wash little and often.

11. If you are cleaning a small part in a large ultrasonic cleaner you can reduce solution wastage by using only a small amount of cleaning solution in a vessel containing the item being cleaned and fill the rest of the bath with plain tap water.

12. Print heads should be considered delicate. It is advisable to soak the print head first to loosen dried ink, run the ultrasonic in cycles of two minutes then flush head with warm water and see if it runs clear. Long cycle times can cause the head to fail or lead to imprecise ink dispensing.

www.allendale-ultrasonics.co.uk - Images & Content ©2013 Allendale Electronics Limited.

Allendale Industrial Series

Product Operation

The following instructions will ensure safe and correct use of your industrial series cleaner:

Step One: Place ultrasonic cleaner on a flat stable surface.

Step Two: Add your chosen cleaning solution to the bath (cleaning agents are not always necessary) to a level where it will not overflow when the item to be cleaned is added. Add item to be cleaned.

Step Three: Plug in the cleaner and switch on via the switch on the rear of the unit if present, otherwise at the wall socket.

Step Four: Digital displays on the control panel should now show the last set time or generator frequency if no time has been set.

Step Five: To increase/decrease the target temperature, turn the dial to you desired temperature we strongly suggest to use a temperature between room temp and 80 °C, using a temperature higher than this will decrease the effectiveness of the cleaner. The heater is used to keep fluid at temperature between cleaning cycles, the ultrasonic process also acts to heat the fluid.

Step Six: To increase the process timer hold the timer up arrow button.
To decrease the process timer hold the timer down arrow button.

Step Seven: Use power up and down buttons to adjust the ultrasonic cleaning power to the desired level. Visual indication of the power is shown on the bar graph display at the bottom of the display window.

Step Eight: Once the time, temperature, and power have been set press the on/off button to begin the cycle. To end the cycle before the timer has counted down press the on/off button again.

Additional Cleaning Modes

Sweep Mode: The sweep function creates a pulsating action by fluctuating the transducer power to reduce standing waves.

This function helps spread the force of the standing waves making it safer to clean sensitive objects, but we always suggest that when cleaning anything delicate to do a test run as some damage still may occur.

Different Methods of Cleaning

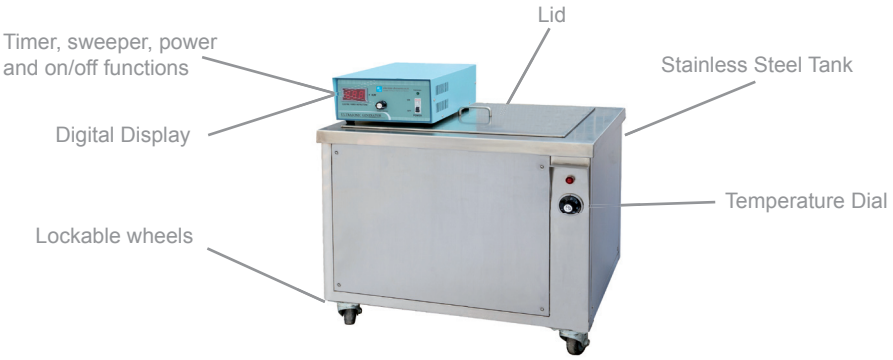
General Cleaning: For lightly soiled objects we suggest only using warm water. This should be paired with a temperature around 40°C .

Enhanced Cleaning: If the objects in question need a deeper clean then we advise the use of an ultrasonic cleaning solution mixed weakly and heated to the mid range of the fluids operating temperature. A temperature between 40-60°C will help you achieved your desired results.

Extensive Cleaning: For the removal of hard or ingrained deposits we recommend a pre-soaking in the ultrasonic bath with detergent/solvent mixed to its strongest concentration ratio to soften unwanted deposits whilst heated to the high end of the fluids operating temperature range.

For more information on Allendale-Ultrasonics' range of solutions visit page 10.

Series Features



www.allendale-ultrasonics.co.uk - Images & Content ©2013 Allendale Electronics Limited.

Industrial Series Dimensions and Specifications

	Tank Capacity	Timer	Ultrasonic Power	Heating Power	Frequency	Tank Dimensions
Units	Litres	Minutes	Watts	Watts	KHz	MM
US-CU-XL-1018	57	1-60	900	3000	28	470x340x360
US-CU-XL-2400	90	1-60	1200	3000	28	590x400x400
US-CU-XL-1030	112	1-60	1500	4000	28	600x470x400
US-CU-XL-1036	145	1-60	1800	6000	28	650x500x450
US-CU-XL-1042	235	1-60	2100	6000	28	650x600x600

General Specifications:
All tanks are manufactured from 2mm SUS304 stainless steel (other grades available for special order cleaners)

Electrical Specifications:
Ultrasonic generator connects to a standard 13amp ring mains socket. Do not use an extension lead.

The fluid heaters require a 3P+N+E, 415V (RED), 16amp, 180° Socket complying to IEC309 or IEC60309 to operate.

Other Tanks and Accessories

Conventional and Cavitek Tanks

Allendale Ultrasonic offer a range of ultrasonic tanks from dial and digital controlled tanks through to our own Cavitek Series. Most are available in various sizes from 0.7L to 27L. The Cavitek range is Allendale-Ultrasonics flagship range offering increased functionality, ideal for professional applications.

For more information on these tanks please contact:

Tel: +44 (0)1992 455925
Email: sales@allendale-ultrasonics.co.uk
Web: www.allendale-ultrasonics.co.uk

Cleaning Baskets

Creating the correct cleaning environment can be difficult. One aspect which is essential is having the items in question off the base of the bath to allow correct propagation around the item.

At Allendale-Ultrasonics.co.uk we supply a range of baskets for our cleaners which make for a useful addition in many applications.

A range of our baskets can be viewed and purchased at: www.allendale-ultrasonics.co.uk

Or call: +44 (0)1992 455925 for more information and advise.

Ultrasonic Solutions

Ultrasonic solutions can be essential when using an ultrasonic cleaner to achieve your desired results, whether that's for cleaning motor parts through to rust removal and optical cleaners.

Allendale Ultrasonics stocks a range of solutions which will cater for a wide range cleaning needs. Most of the solutions come in a range of bottle sizes right through to 25 litre bottles.

All products can be viewed and purchase at www.allendale-ultrasonics.co.uk or through an authorised distributor.

www.allendale-ultrasonics.co.uk - Images & Content ©2013 Allendale Electronics Limited.

Rapidex

Rapidex is a UK based company that designs and manufactures its products in the UK. The products are used throughout Great Britain, Europe and the rest of the world.

The company has specialised in producing cleansers and associated infection control products ideal for ultrasonic cleaners for over 40 years. They are used in a wide variety of situations ranging from Hospital Sterile Services departments to Dentists, Doctors Surgeries, Veterinary practices, Hospitals, Tattoo studios, mechanics and workshops.

We at allendale-ultrasonics have discovered that the cleaning properties of Rapidex makes it ideal for removing tough stains and grease, and is manufactured to a very high standard. Rapidex is extremely easy to use simply drop a sachet or a single scoop of cleaning powder in to 5L of water and allow 5mins to fully dissolve and then use it like any other cleaning solution. This being a powder means there are less shipping restrictions allowing us to ship worldwide for lower shipping rates.

Available In:

10 pack	- US-SO-RAP-10PK
25 pack	- US-SO-RAP-25PK
50 pack	- US-SO-RAP-50PK
Bulk 2.25kg box	- US-SO-RAP-2.25KG

Legal Information

Trademarks and Copyrights

This Document and its content is copyright of Allendale Electronics Ltd - © Allendale Electronics 2010. All rights reserved.

Any redistribution or reproduction of part or all of the contents in any form is prohibited.

allendale-ultrasonics.co.uk
Suppliers of Ultrasonic Cleaners and Solutions

allendale-ultrasonics.co.uk is a trademark of Allendale Electronics Ltd.

CAVITEK PROFESSIONAL SERIES

Cavitek™ is a trademark of Allendale Electronics Ltd.

Contact Details

Allendale Group
Allendale-Ultrasonics Dept.
Pindar Road
Hoddesdon
Hertfordshire
EN11 0BZ

+44 (0)1992 455925
sales@allendale-ultrasonics.co.uk
www.allendale-ultrasonics.co.uk

www.allendale-ultrasonics.co.uk - Images & Content ©2013 Allendale Electronics Limited.